



ORL. Issue 2; May 2022

# Otorhinolaryngology

AIIMS RAJKOT

**To hear for life,  
Listen with care**



## NOISE INDUCED HEARING LOSS

### Inside this issue

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**WHO theme for 2022  
WORLD HEARING DAY  
3rd March**

### Message from the Executive Director

I heartily congratulate the Department of Otorhinolaryngology for their initiative to release newsletter in their specialty.

My best wishes to the entire team.....

- Dr. (Col) C.D.S. Katoch

### Message from Team ENT

This newsletter intends to inform about the recent trends and raise awareness on pertinent themes related to the field of Otorhinolaryngology.

Hope you enjoy reading this.

Feedback and suggestions are welcome.

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## Problem statement

- ✚ As per WHO, over 5% (430 million) of the world's population suffers disabling hearing loss. By 2050 this number could increase by over 50% to 700 million.
- ✚ As much as 60% hearing loss is preventable in the younger age group.
- ✚ Noise-induced hearing loss (NIHL) is the most common type, second only to age-related hearing loss.
- ✚ Nearly 1.1 billion young people (12-35 years of age) are at risk of hearing loss due to unsafe listening practices.
- ✚ Amongst population aged 12–35 years in the middle and high-income countries, approximately 50% listen to unsafe sound levels through personal audio devices; 40% are exposed to potentially damaging sound levels in nightclubs, discotheques, bars, pubs
- ✚ Another indicator of potential risk is rising smartphone sales — 1.5 billion devices were sold globally in 2016. Increased accessibility and use of personal audio systems is accompanied by their use at high volumes for extended periods of time.
- ✚ WHO estimates that unaddressed hearing loss results in annual global cost of 980 billion international dollars.

## Effects of noise

- ✚ Noise causes fatigue of cochlear hair cells with brief exposure, and induces apoptosis with prolonged exposure.
- ✚ Noise induced hearing loss (NIHL) from brief noise exposure maybe reversible.
- ✚ Permanent NIHL is caused by either acoustic trauma due to an intense blast of sound or chronic long-term exposure to loud sounds, such as those associated with occupational exposure, personal entertainment devices and loud recreational activities.
- ✚ NIHL is influenced by environmental and genetic factors.
- ✚ Noise induces not just cochlear injury but also upstream damage to the auditory pathway.
- ✚ The vestibular system is susceptible to injury by noise manifesting in various forms of vertigo and disequilibrium.

## Safe limit of sound dose

- WHO standard level for adults: **80 dB for 40 hours a week**  
This applies 1.6 Pa<sup>2</sup>h per 7 days as the reference exposure.
- WHO standard level for sensitive users (e.g., children): **75 dB for 40 hours a week**  
This applies 0.51 Pa<sup>2</sup>h per 7 days as the reference exposure.



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## Early signs of hearing loss

- Ringing sensation in ear
- Ears feels clogged
- Muffled and unclear voices
- Difficulty understanding words in a crowd
- Frequently asking others to speak more slowly, clearly and loudly
- Need to turn up volume of television or radio

#LoveYourEars  
#HearTheWorld  
#HealTheWorld

## Impacts of hearing loss

- ✚ **Problems with listening and communication:** This may range from difficulty in hearing speech in noisy surroundings, listening in quiet, to inability to hear even loud warning sounds. The use of masks and social distancing in current times create additional obstacles for people with hearing loss, who often rely on lip reading and other facial and physical cues to communicate.
- ✚ **Impaired Speech and language development:** Children with hearing loss show delayed speech and language development which is likely to continue into adulthood. Impairment is proportionate to degree of hearing loss. Even mild or unilateral hearing losses, which are commonly overlooked, have adverse impact on speech and language development.
- ✚ **Cognitive impairment:** The impact on cognition is not limited to children but is evident in adult-onset hearing loss as well. Hearing loss is the largest potentially modifiable risk factor for age-related dementia
- ✚ **Education:** Hearing loss results in reduced school performance, greater risk of dropping out of school, and lower likelihood of applying for higher education.
- ✚ **Social isolation:** Hearing loss contributes to social isolation and loneliness at all ages. Impaired ability to comprehend auditory information and maintain conversations may lead to avoidance of potentially embarrassing social situations. Lack of social engagement and loneliness may further contribute to cognitive decline and depression.
- ✚ **Social stigma:** Hearing loss is frequently linked with feelings of inadequacy and low self-esteem. Many choose not to use hearing aids due to prejudiced mindsets and stereotypes.
- ✚ **Effect on mental health:** Social withdrawal, feelings of embarrassment, rejection, anxiety, frustration and anger are noted. Higher rates of depression and lower quality of life are reported in hearing impaired.
- ✚ **Economic loss:** Adults with hearing loss have a much higher unemployment rate. Those who are employed, earn lower wages, or retire earlier than those without hearing impairment. Apart from this, there is the cost of management and rehabilitation of hearing loss.



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### What is unsafe listening?

A sound of 80 dB is equivalent to the noise of heavy traffic heard inside a vehicle. The permissible time for safe listening decreases as sound levels increase.

For example, a sound as loud as 100 dB – the level produced by a subway train – can only be listened to safely for less than five minutes each day.

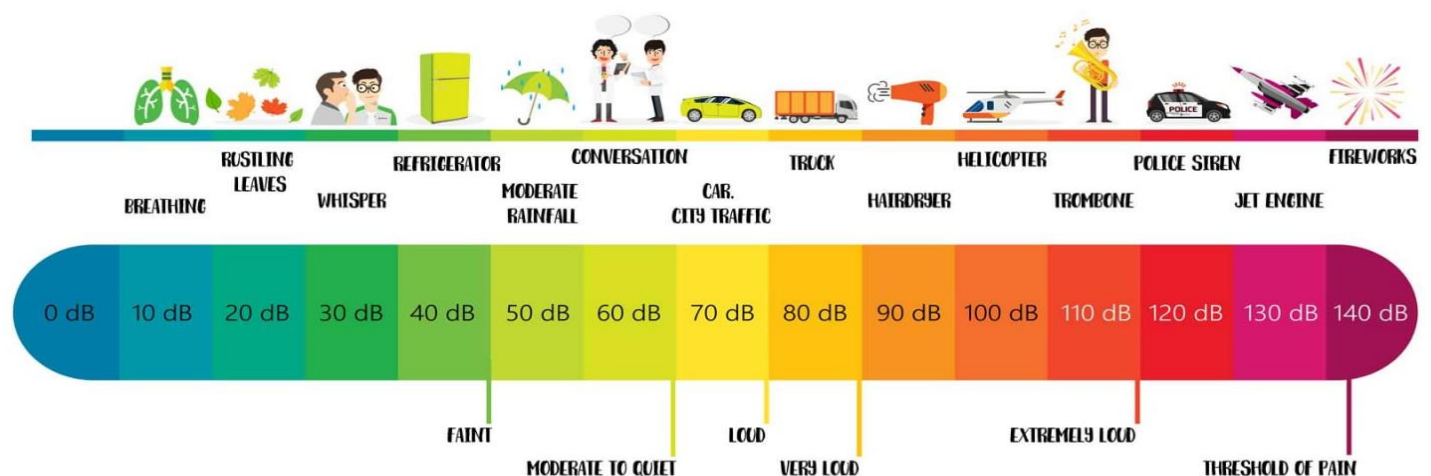
Music at clubs and concerts is often as loud as 110 dB, and some headphones can play music equally as loud when the volume is at maximum level. Even a short duration of exposure to levels of such high decibels can be harmful. Habitual exposure over time almost certainly leads to tinnitus and hearing loss.

### What is safe listening?

The risk of hearing loss depends on the level, duration, and frequency of exposure to loud sounds. The recommended safe level for leisure noise is below 80 dB for maximum of 40 hours in a week. This represents the acceptable level of sound energy that an individual can receive without putting their hearing at risk, described as **“sound allowance”** or **“calculated sound dose”**.

In order to stay within this level, one should:

- limit the time engaged in noisy activities – including activities at work, home, and leisure;
- keep the volume as low as possible;
- monitor safe listening levels over personal audio systems and in noisy spaces; heed the warning signs of hearing loss.
- undergo regular hearing check-ups in order to identify hearing loss at an early stage.





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## Keep the volume down 60-60 rule

Limit the headphone usage to 60 minutes per day at 60% of the maximum volume or less.



## Hearing protection

Move away from loud sounds.

Take short listening breaks.

Use of ear plugs/ear muffs in noisy surroundings reduces sound exposure by 5 to 45 dB.

## Choice of headphones

Opt for over-the-ear headphones instead of earbuds.

Opt for noise cancelling earphones, which eliminate the need to increase the volume to mitigate background noise.

## Make listening safe

### Safe listening devices

Use smart devices and applications to monitor sound levels and warn against unsafe listening habits.

### Early detection

Watch for early signs of hearing loss.

Get regular hearing check-up done, especially if your occupation involves exposure to noise, or you have family history of early onset hearing loss.

### WHO-ITU Global standard for safe listening devices

- Every device shall measure the listener's sound allowance, based on choice of two modes of reference exposure.
- Each device should include options for limiting volume and parental volume control.
- Each device shall provide the user with usage information, personalized messages and cues for action and general information on safe listening.

